

(19)



(11)

EP 2 708 173 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:

19.03.2014 Bulletin 2014/12

(51) Int Cl.:

A47L 9/20 (2006.01)

A47L 5/36 (2006.01)

A47L 9/06 (2006.01)

(21) Application number: **13004390.4**

(22) Date of filing: **09.09.2013**

(84) Designated Contracting States:

**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR**

Designated Extension States:

BA ME

(71) Applicant: **Berta, Giovanni, Matteo
10070 Cantoira (TO) (IT)**

(72) Inventor: **Berta, Giovanni, Matteo
10070 Cantoira (TO) (IT)**

(74) Representative: **Garavelli, Paolo
A.BRE.MAR. S.R.L.
Via Servais 27
10146 Torino (IT)**

(30) Priority: **18.09.2012 IT TO20120806**

(54) **Hitting-type cleaning system of a filtering member for vacuum cleaner**

(57) A hitting-type cleaning system is described, of a filtering member for vacuum cleaner, in particular an

ash-cleaner (6), containing at least one filtering member (3), comprising at least one hitting means (1) of said filtering member (3).

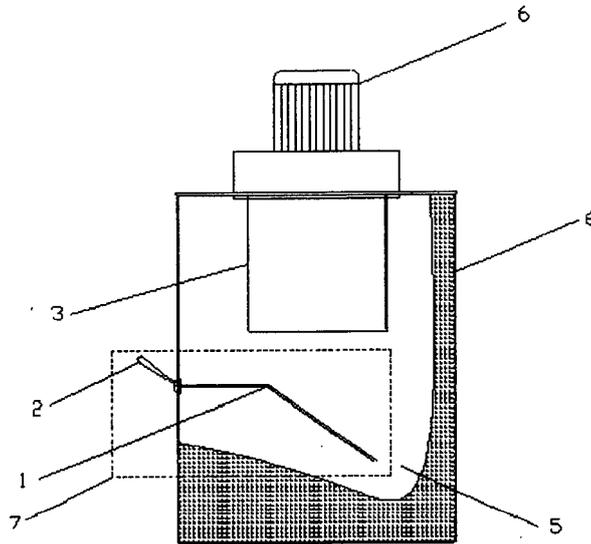


FIG. 2

EP 2 708 173 A1

Description

[0001] The present invention refers to a hitting-type cleaning system of a filtering member inserted in a vacuum cleaner, and in particular in an ash-cleaner.

[0002] Vacuum cleaners, usually also provided for use as ash-cleaners, are known in the art, and, due to the particular consistency of the sucked ash, are equipped with cleaning systems for the inserted filtering member, such as a self-cleaning system, which uses jets of counter-flowing compressed air; ash-cleaners are also known which are equipped with a cleaning system which performs an axial compression of the above filtering member: an example of such system is disclosed, in particular, in CN-A-2915008.

[0003] Both above arrangements however can brake or degrade the filtering member, strongly reducing the performances of the filtering member and the ash-cleaner in which it is inserted. Moreover, a water-type system is known in the art, which prevents ashes from going out and dusts from being dispersed into the motor, but implies a strong increase of the ash-cleaner weight, since it needs therein a high amount of water.

[0004] Therefore, object of the present invention is solving the above prior art problems, by providing a hitting-type cleaning system of a filtering member for ash-cleaner which guarantees an optimum maintenance of the filtering member, improving its life and its performance quality, and consequently also those of the ash-cleaner in which it is inserted.

[0005] A further object of the present invention is improving the operation of the ash-cleaner by inserting elastic means inside the filtering member, to ensure an optimum hitting.

[0006] The above and other objects and advantages of the invention, as will appear from the following description, are obtained with a hitting-type cleaning system for a filtering member of a ash-cleaner as claimed in Claim 1. Preferred embodiments and non-trivial variations of the present invention are the subject matter of the dependent claims.

[0007] It is intended that all enclosed claims are an integral part of the present description.

[0008] The present invention will be better described by some preferred embodiments thereof, provided as a non-limiting example, with reference to the enclosed drawings, in which:

- Figure 1 is a front sectional view of a preferred embodiment of the hitting-type cleaning system according to the present invention;
- Figures 2 and 3 show a side sectional view of the hitting-type cleaning system according to the present invention, respectively in an operating rest position and in an operating cleaning position;
- Figure 4 shows a side sectional view of a preferred embodiment of the filtering member;
- Figure 5 shows a side sectional view of another al-

ternative embodiment of the hitting-type cleaning system according to the present invention; and

- Figure 6 shows a front sectional view of a further alternative embodiment of the hitting-type cleaning system according to the present invention.

[0009] With reference to the Figures, a preferred embodiment of the present invention is shown and described. It will be immediately obvious that numerous variations and modifications (for example related to shape, sizes, arrangements and parts with equivalent functionality) could be made to what is described, without departing from the scope of the invention as appears from the enclosed claims.

[0010] With reference to the Figures, the hitting-type cleaning system of a filtering member 3 for vacuum cleaner, and in particular for an ash-cleaner 6, according to the present invention is substantially composed of hitting means 1 made of metallic, or plastic material, or other materials, and with a square, oval or other suitable shape, for such filtering member 3, such hitting means 1 being equipped with at least one control member 2 having sizes adapted to be used by a user.

[0011] Preferably, as it is possible to note in Figures 1 to 4, the hitting means 1 of the filtering member 3 are composed of a lever mechanism 7, for example of the first or second order, with manual actuation comprising at least one first end equipped with at least such control member 2, such as for example a handle, a pushbutton, etc., and a second end, opposite to the first end, equipped with a hitting portion of the filtering member 3, such a hitting portion being adapted to externally hit the filtering member 3 in order to externally carry out an hitting and shaking action on the filtering member 3 itself by means of at least one external impact of the hitting portion against the filtering member 3.

[0012] In particular, the lever mechanism 7 is adapted to transmit to the hitting portion a force manually applied onto the control member. With particular reference to Figures 2 and 3, it is possible to note that, starting from an operating rest position of the system according to the present invention, like the one for example shown in particular in Figure 2, the above hitting means 1 are actuated, thereby applying at least one force onto the control member 2, which, transmitted to the hitting portion through the mechanism 7, takes the hitting means 1 to their operating hitting position, like the one for example shown in particular in Figure 3, allowing to hit and shake the filtering member 3 through the simultaneous external impact between the hitting portion and the filtering member 3 themselves, in particular the base or any side portion of such element 3. Such hitting and shaking generates the fall of ashes, trapped in the filtering member 3, into a suitable tank 5 contained in the motored ash-cleaner 6. The filtering member 3, preferably a cloth filter, can be characterised by inserting therein elastic means 4, such as a helical spring, placed perpendicular between the base of the filter framework 8 and the cloth 9 which coats

it, optimising the operating efficiency of the hitting means 1.

[0013] Alternatively, as it is possible to note in Figures 5 and 6, the hitting means can comprise at least one fork-type beating element 10, equipped with a double-blade mechanism 11 and operatively connected to at least one control member 12, such fork-type beating element being actuated through manual traction and release of such control member 12, as shown in particular in Figure 5. Such traction movement generates the simultaneous external impact between a hitting portion of one of the two blades of the fork-type beating element 10 and the filtering member 3 and afterwards, the release movement generates the simultaneous impact between the hitting portion of the other blade of the fork-type beating element 10 and such filtering member 3, in particular against the external sides of such element 3. The same fork-type beating element 10 can be equipped with a hinge mechanism 13, as shown for example in Figure 6, and can be actuated by means of a rotation of a related control member 14 suitably connected thereto.

[0014] The whole system can be inserted into the ash-cleaner according to the preferred mode, choosing angle and position.

[0015] The invention has the following advantages:

- it ensures a longer life and efficiency of the filtering member inserted in the ash-cleaner, reducing possible breakage and degrade events of the filtering member itself;
- it allows an easier and more immediate maintenance of the filtering member by a user;
- it guarantees more efficiency of the ash-cleaner wherein the filtering member is inserted: a better cleaning of the filtering member allows a better and longer use of the ash-cleaner, reducing the amount of dust which can damage the internal or external motor;
- it ensures a better cleaning of the environment in which the ash-cleaner is used, since the above hitting system enables ashes, trapped into the filtering member, to fall inside a suitable tank, present in the ash-cleaner. Following a withdrawal of the filtering member from its housing, it guarantees a high reduction of the possible release of ashes in the surrounding environment.

Claims

1. Hitting-type cleaning system of a filtering member for vacuum cleaner, in particular an ash-cleaner (6), containing at least one filtering member (3), **characterised in that** it comprises at least one hitting means (1) of said filtering member (3), said hitting means (1) comprising at least one hitting portion being adapted to externally hit said filtering member (3) in order to externally carry out an hitting and shaking

action on said filtering member (3) by means of at least one external impact of said hitting portion against said filtering member (3).

2. System according to the previous claim, **characterised in that** said hitting means (1) is composed of at least one first or second order lever mechanism (7) adapted to externally hit and shake said filtering member (3) contained in said ash-cleaner (6).
3. System according to the previous claim, **characterised in that** said lever mechanism (7) adapted to externally hit and shake said filtering member (3) is equipped with at least one control member (2) and at least one said hitting portion of said filtering member (3), said lever mechanism (7) being adapted to transmit to said hitting portion a force manually applied onto said control member (2).
4. System according to claim 1, **characterised in that** said hitting means comprises at least one fork-type beating element (10) of said filtering member (3) equipped with a double-blade mechanism (11).
5. System according to the previous claim, **characterised in that** said fork-type beating element (10) is actuated through manual traction and release of at least one control member (12).
6. System according to claim 4, **characterised in that** said fork-type beating element (10) is equipped with a hinge mechanism (13) actuated through a rotation of a control member (14).
7. System according to claim 1, **characterised in that** said filtering member (3) is further equipped with at least one elastic means (4).
8. System according to the previous claim, **characterised in that** said elastic means (4) is composed of a helical spring.

50

55

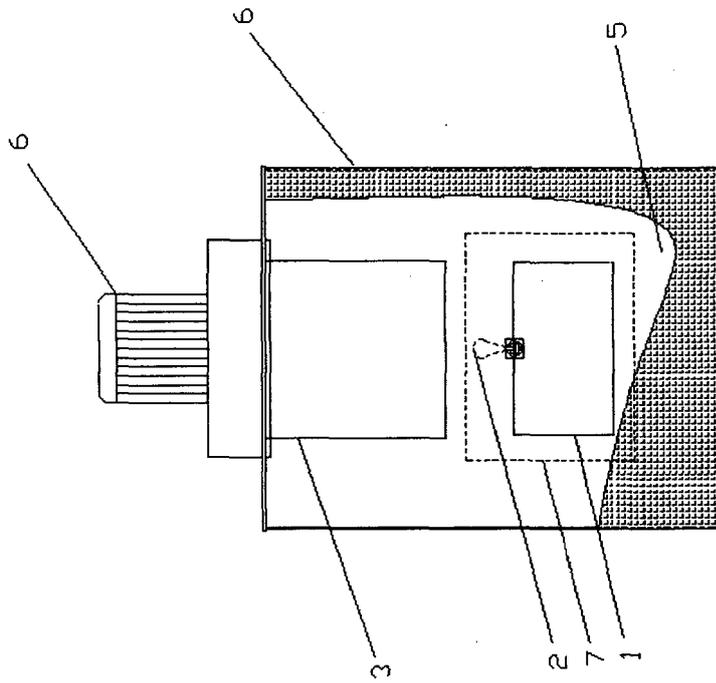


FIG. 1

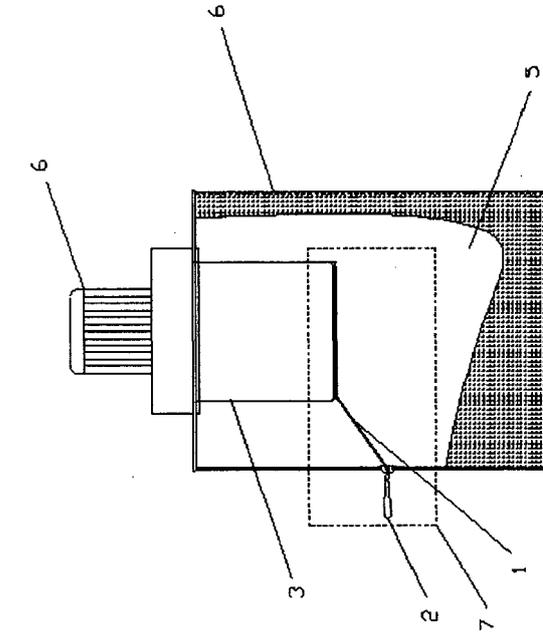


FIG. 2

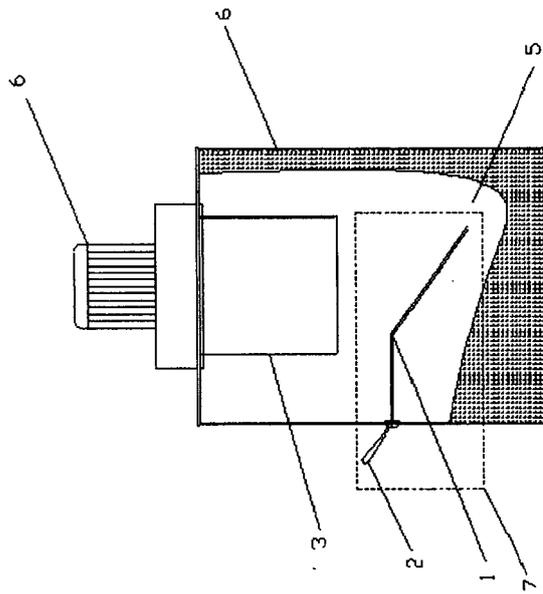


FIG. 3

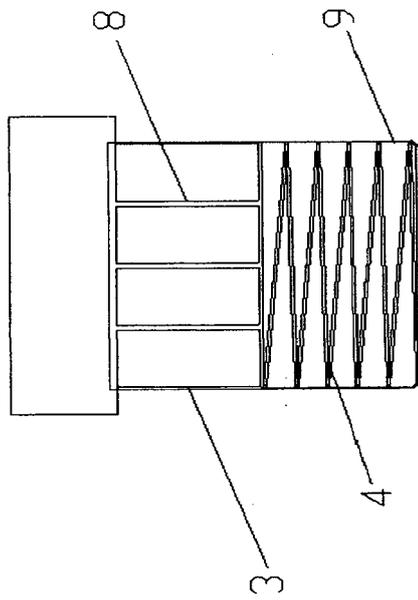


FIG. 4

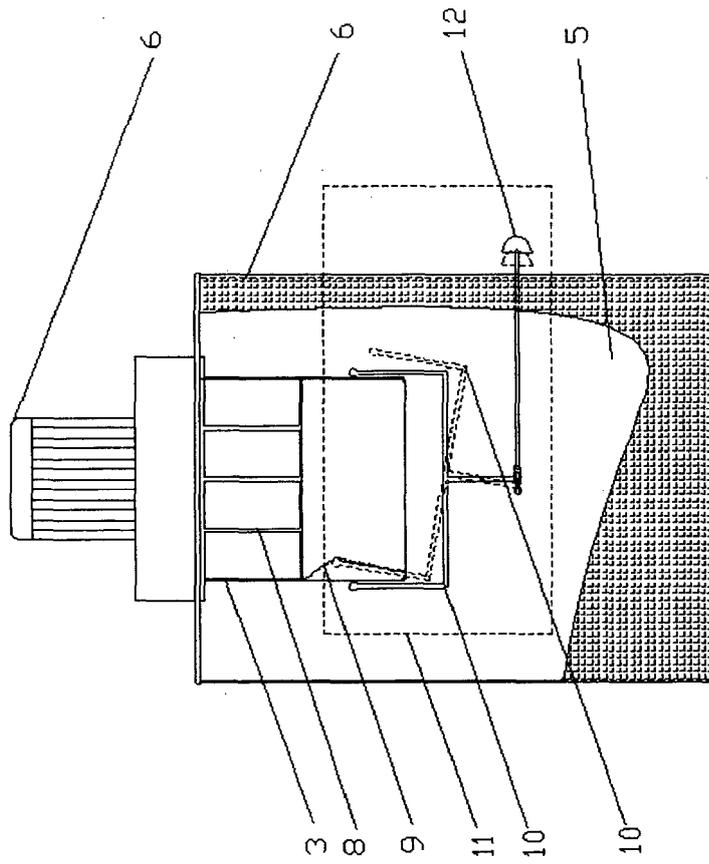


FIG. 5

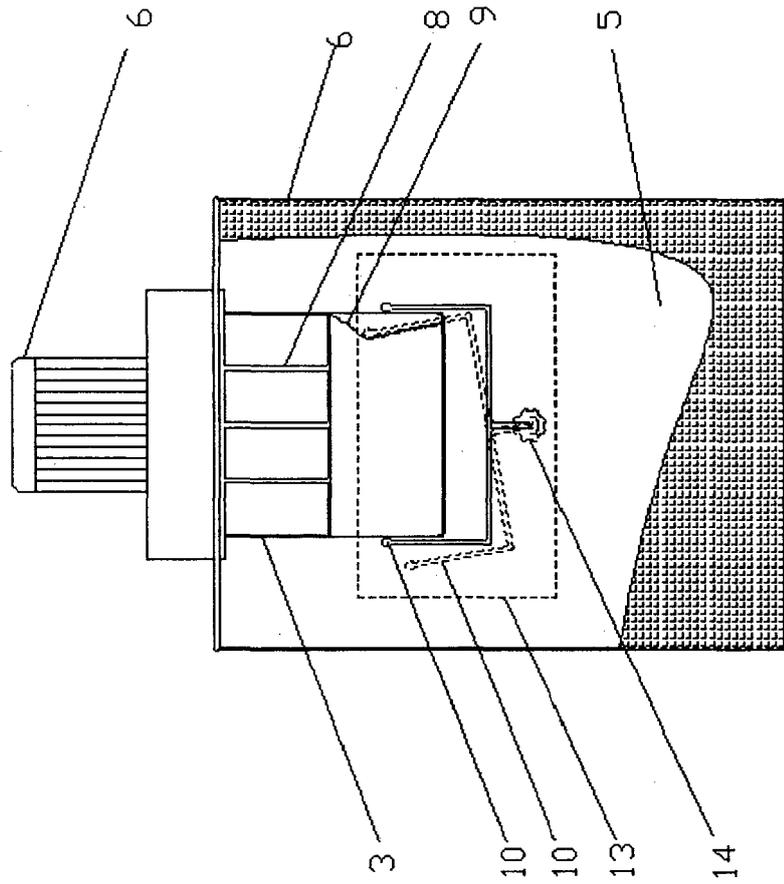


FIG. 6



EUROPEAN SEARCH REPORT

Application Number
EP 13 00 4390

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 87 13 636 U1 (ALFRED KÄRCHER GMBH & CO) 10 December 1987 (1987-12-10) * the whole document *	1-3	INV. A47L9/20 A47L5/36 A47L9/06
X	DE 219 493 C (DEUTSCHE METALLWAREN AG) 11 September 1908 (1908-09-11) * the whole document *	1-3	
A	----- * the whole document *	4,6	
X	US 4 473 012 A (DURAN REGINALD F [US]) 25 September 1984 (1984-09-25) * the whole document *	1-3	
A	----- US 946 535 A (CRAVER FRANK B [US]) 18 January 1910 (1910-01-18) * the whole document *	1-3	
A	----- US 2 232 574 A (VEEVERS WILLIAM B) 18 February 1941 (1941-02-18) * the whole document *	1-3	
			TECHNICAL FIELDS SEARCHED (IPC)
			A47L
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
Munich		12 November 2013	Masset, Markus
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

1
EPO FORM 1503 03 82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 13 00 4390

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

12-11-2013

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 8713636	U1	10-12-1987	NONE	

DE 219493	C	11-09-1908	NONE	

US 4473012	A	25-09-1984	NONE	

US 946535	A	18-01-1910	NONE	

US 2232574	A	18-02-1941	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- CN 2915008 A [0002]